

UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF PUBLIC ROADS
DIVISION OF AGRICULTURAL ENGINEERING

S. H. McCrory, Chief

MONTHLY NEWS LETTER

WASHINGTON, D. C., JANUARY 21, 1929

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: RECENTLY THE QUESTION CAME UP AS TO WHETHER THE :
: AUTHOR OF A GOVERNMENT BULLETIN COULD MAIL UNDER FRANK :
: A COPY OF THE BULLETIN WITH A NOTATION THEREON THAT :
: IT IS SENT "WITH THE COMPLIMENTS OF THE AUTHOR." IT :
: WILL BE NOTED FROM THE FOLLOWING QUOTATION THAT NOT :
: ONLY IS IT UNLAWFUL TO FRANK THE BULLETIN, BUT THAT :
: IT IS UNLAWFUL TO DISTRIBUTE A BULLETIN SO ENDORSED. :
: THIS IS TAKEN TO MEAN THAT AN ENDORSED BULLETIN COULD :
: NOT BE MAILED UNDER STAMP, PASSED OUT, OR DISTRIBUTED :
: BY ANY METHOD. THE ACT REFERRED TO IS AS FOLLOWS: :
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: ACT DATED JANUARY 12, 1895 - 28 STAT. -PAR. :
: 620 - :
: NO REPORT, DOCUMENT, OR PUBLICATION :
: OF ANY KIND DISTRIBUTED BY OR FROM AN EX- :
: ECUTIVE DEPARTMENT OR BUREAU OF THE GOVERN- :
: MENT SHALL CONTAIN ANY NOTICE THAT THE SAME :
: IS SENT WITH THE COMPLIMENTS OF AN OFFICER :
: IN THE GOVERNMENT OR WITH ANY SPECIAL NOTICE :
: THAT IT IS SO SENT. :
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ACTIVE WORK HAS BEEN BEGUN IN CONNECTION WITH THE PROJECT RELATING TO THE PREVENTION AND CORRECTION OF SOIL EROSION ON THE EXPERIMENT FARM, GUTHRIE, OKLA. THE HEADQUARTERS OF C.E. RAMSER HAVE BEEN MOVED FROM CAPE GIRARDEAU TO GUTHRIE. ON JANUARY 7, 8 AND 9 A CONFERENCE WAS HELD AT GUTHRIE BY REPRESENTATIVES OF THIS DIVISION AND OF THE BUREAU OF CHEMISTRY AND SOILS. MESSRS. MCCRORY, JONES AND RAMSER REPRESENTED THIS DIVISION. DR. MCCALL AND MR. BENNETT REPRESENTED THE BUREAU OF CHEMISTRY AND SOILS. DETAILED PLANS FOR THE INVESTIGATIONS TO BE UNDERTAKEN DURING 1929 WERE OUTLINED. A. A. GARRETT OF OKLAHOMA, HAS BEEN APPOINTED AS FARM FOREMAN TO WORK UNDER THE GENERAL DIRECTION OF MR. RAMSER. ARRANGEMENTS ARE BEING MADE TO PURCHASE THE NECESSARY MACHINERY, INCLUDING A TRACTOR, TERRACE GRADERS, VENTURI FLUMES, AND WATER STAGE RECORDERS.

AFTER LEAVING THE SOIL EROSION CONFERENCE AT GUTHRIE, MR. McCrory PROCEEDED TO LOGAN, UTAH, FOR CONFERENCES WITH THOSE IN CHARGE OF THE BEAR BAY PROJECT, IN CONNECTION WITH WHICH WE ARE DOING THE ENGINEERING WORK FOR THE BUREAU OF BIOLOGICAL SURVEY. FROM LOGAN, MR. McCrory WENT TO EL PASO AND OTHER POINTS IN SOUTHWEST TEXAS FOR CONFERENCES WITH OFFICIALS OF THE BUREAU OF ENTOMOLOGY ON MECHANICAL MEANS OF CONTROLLING THE PINK BOLL WORM. ENROUTE TO WASHINGTON MR. McCrory WILL STOP AT AUBURN, ALA. TO DISCUSS WITH OFFICIALS OF THAT INSTITUTION THE PROPOSED COOPERATIVE WORK IN FARM MACHINERY.

L.A. JONES AND T.A.H. MILLER ARE PREPARING A BOOK FOR THE USE OF EXTENSION WORKERS, ILLUSTRATING TYPICAL PLANS FOR FARM STRUCTURES WHICH ARE AVAILABLE IN THIS DIVISION. THE PURPOSE OF THIS BOOK IS TO ACQUAINT EXTENSION WORKERS WITH THE TYPES OF PLANS WHICH INTERESTED FARMERS MAY SECURE.

F.T. CAHILL, ARCHITECTURAL DRAFTSMAN, RESIGNED IN DECEMBER, 1928, AND H.A. MAGNUSON, ARCHITECTURAL DRAFTSMAN, HAS BEEN APPOINTED TO FILL THE VACANCY.

R. B. GRAY ATTENDED THE ANNUAL CORN BORER RESEARCH CONFERENCE HELD IN WASHINGTON JANUARY 2.

F.E. STAEBNER IS PREPARING A REPORT ON THE TESTS OF SPRAY IRRIGATION EQUIPMENT WHICH HE MADE LAST AUTUMN AT THE ARLINGTON FARM. THESE TESTS, WHICH WERE UNDERTAKEN PRIMARILY TO COMPARE RECENTLY DEVELOPED GERMAN SPRAY EQUIPMENT WITH AMERICAN EQUIPMENT NOW IN USE, HAS SUBSTANTIATED FORMER EXPERIMENTS WHICH SHOWED THAT THE DISTRIBUTION FROM STATIONARY OR CIRCULAR SPRAY NOZZLES IS, IN GENERAL, NOT AS GOOD AS THE CASUAL OBSERVER WOULD JUDGE FROM WATCHING THE SPRAYING WATER.

THE CIRCULAR RINGS OR BANDS OF HEAVY AND LIGHTLY WETTED AREAS FOUND BY FORMER INVESTIGATORS WERE NOT FOUND IN THESE TESTS. HEAVY AND LIGHTLY WETTED AREAS WERE FOUND BUT THEY TOOK IRREGULAR SHAPES AND WHILE THEY CENTER IN A ROUGH WAY ABOUT THE SPRAYING NOZZLE THEY WERE IN MANY CASES VERY POORLY BALANCED AS FROM SIDE TO SIDE OVER THE WETTED AREA. IT IS POSSIBLE THAT THIS IRREGULARITY WAS DUE SOLELY TO WIND EFFECT. WHILE THE GERMAN NOZZLES HAVE IN A CRUDE WAY SUCCEEDED IN SPREADING WATER OVER AN AREA THAT APPROACHES A SQUARE IN SHAPE, IT IS AT THIS TIME OPEN TO QUESTION IF THEY ARE SUPERIOR TO THE BEST AMERICAN EQUIPMENT. A MARKED DIFFERENCE IN THE UNIFORMITY OF DISTRIBUTION HAS BEEN FOUND BETWEEN THE DIFFERENT AMERICAN SPRINKLERS.

A MORE UNIFORM DISTRIBUTION IS ATTAINABLE BY THE OVERHEAD SPRAY NOZZLE PIPE TYPE OF IRRIGATION EQUIPMENT. IN THIS EQUIPMENT SOME NOZZLES DID BETTER THAN OTHERS AT LOW PRESSURES; SATISFACTORY DISTRIBUTION WAS SECURED FROM THE FOUR KINDS TESTED AT THE HIGHER PRESSURES. IT WAS FOUND THAT WHERE PRESSURE AS HIGH AS 55 POUNDS PER SQUARE INCH WAS AVAILABLE THE SPRAY NOZZLE PIPES COULD PROPERLY BE PLACED 55 FEET APART, WHICH WOULD UNDOUBTEDLY EFFECT A SAVING IN INSTALLATION COSTS FOR LARGE SYSTEMS. FOR SMALLER SYSTEMS IT IS QUESTIONABLE IF ANY BENEFIT WOULD BE ATTAINED BY ATTEMPTING TO USE HIGH PRESSURES.

TWO TYPES OF AUTOMATIC NOZZLE PIPE TURNERS WERE USED IN THE TESTS. BOTH PROVED VERY SATISFACTORY IN OPERATION.

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R. G. HEMPHILL OF SAN ANTONIO, TEXAS, SPENT THE GREATER PART OF THE MONTH OF DECEMBER IN THE BERKELEY OFFICE CONSULTING WITH MR. McLAUGHLIN AND OTHER MEMBERS OF THE BERKELEY FORCE. RESULTS OF WORK FOR THE PAST SEVERAL YEARS IN TEXAS WERE CAREFULLY CONSIDERED AND PLANS FOR THE FUTURE OF THE WORK THERE DISCUSSED.

MR. HEMPHILL REPORTS THAT ON JULY 1, 1929, FIVE YEARS OF CONTINUOUS RECORDS WILL HAVE BEEN OBTAINED AT NINE SILT SAMPLING STATIONS IN THE BRAZOS DRAINAGE OF TEXAS. THE GREAT MAJORITY OF THE STREAMS OF TEXAS ARE FED BY RUN-OFF FROM RAINFALL WHICH IS ERRATIC IN AMOUNT AND OCCURRENCE AND CONSEQUENTLY A LARGE VARIATION IN THE SILT LOAD CARRIED IS TO BE EXPECTED. THE NECESSITY FOR LONG-TERM RECORDS TO APPROXIMATE THE AVERAGE IS INDICATED BY THE PRELIMINARY FIGURES SHOWING THE LOAD OF SUSPENDED SILT IN THE BRAZOS RIVER AT WACO, TEXAS, FOR A PERIOD OF THREE YEARS. THE MONTHLY SILT LOAD CARRIED BY THIS RIVER VARIED FROM 0 TO 7,651,000 TONS AND THE ANNUAL LOAD FROM 17,405,000 TO 22,316,000 TONS.

THE PROPER FACTOR FOR CONVERTING WEIGHT OF SILT TO VOLUME OF SILT WILL DEPEND UPON THE MANNER AND PLACE OF DEPOSIT AND UNDER FAVORABLE CONDITIONS IN AN IRRIGATION RESERVOIR THE WEIGHT OF DRY MATERIAL IN A CUBIC FOOT OF DEPOSIT MAY APPROACH 80 POUNDS. ON THIS BASIS THE ANNUAL SILT LOAD AT WACO, AS DETERMINED BY THE THREE-YEAR RECORD, WOULD OCCUPY A VOLUME OF NEARLY 11,000 ACRE-Feet IF DEPOSITED IN A RESERVOIR.

W. W. McLAUGHLIN AND A.T. MITCHELSON VISITED THE SOUTHERN CALIFORNIA FIELD DURING THE LAST FEW DAYS OF DECEMBER. MR. McLAUGHLIN AND A.A. YOUNG WENT OVER THE TERRITORY TO BE EMBRACED BY THE SOIL TANK STUDY IN THE VICINITY OF SANTA ANA IN ORDER TO DETERMINE THE MOST SUITABLE LOCATION FOR THE TANKS.

MR. MITCHELSON WENT OVER THE EXPERIMENTAL WORK BEING DONE BY THE CITY OF LOS ANGELES IN "SPREADING" WATER FOR UNDERGROUND STORAGE. IN THE LOWER SAN FERNANDO VALLEY 7.4 ACRES OF SAND-GRAVEL LAND IN THE TUJUNGA WASH HAVE BEEN SURFACE SCRAPED AND DIVIDED INTO 22 BASINS OF APPROXIMATELY .35 ACRE EACH. SEVENTEEN OF THE BASINS ARE FED BY ONE PIPE THROUGH WHICH WATER IS METERED, THE GROUP BEING CONNECTED BY MEANS OF OVERFLOW PIPES. THE REMAINING 5 BASINS ARE INDIVIDUALLY FED AND METERED AND RECORDING INSTRUMENTS INSTALLED IN EACH. WHILE IT WOULD BE PREMATURE TO MAKE ANY STATEMENT AS TO RESULTS, THE RATE OF STORAGE IN THE EXPOSED AREA HAS RUN FROM 16 ACRE-Feet PER ACRE PER DAY TO ABOUT 4 ACRE-Feet PER ACRE PER DAY, THE FALLING OFF, OF COURSE, BEING DUE TO THE SATURATION OF THE UNDER STRATA. THIS LAST RATE OF FILTRATION, HOWEVER, HAS REMAINED ALMOST CONSTANT. IT WAS INTERESTING TO NOTE THE MORE RAPID RATE OF FILTRATION AS THE TEMPERATURE OF THE WATER INCREASED DURING THE DAY.

THE SMALL SCALE EXPERIMENTS HAVE SO ENCOURAGED THE OFFICIALS OF THE WATER BUREAU OF THE CITY THAT THEY HAVE DECIDED TO STRIP AND PREPARE 200 ACRES IN A NEARBY LOCATION IN ORDER TO ATTEMPT THE STORAGE OF THE 38,000 ACRE-Feet OF WATER THE CITY LOST BY THE FAILURE OF THE ST. FRANCIS DAM.

DURING THE LATTER PART OF DECEMBER, DEAN W. BLOODGOOD SPENT SEVERAL DAYS ASSISTING DR. F.A. FENTON OF THE BUREAU OF ENTOMOLOGY AT PRESIDIO, TEXAS WITH SOME IRRIGATION EXPERIMENTS IN CONNECTION WITH COTTON PINK BOLL WORM CONTROL.

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LLOYD N. BROWN who is in charge of field operations on irrigation investigations on King Island, one of the peat tracts of the Sacramento-San Joaquin Delta, Calif., reports some interesting results on nematodes (*Caenorhynchus radiculicola*) control. Plots of ground infested with nematodes have been continuously flooded for approximately six months. In samples taken from the plots at the end of five months G. Thorne, Nematologist of the Bureau of Plant Industry, Salt Lake City, failed to find a single nematode. He also failed to find any dead nematodes in these same samples. Nematodes obtained from the plots by Mr. Thorne and kept in the laboratory under water were dead at the end of the fourth month. Therefore, it appears from the results of the experiments to date that four or five months of continuous flooding under the conditions of the experiment will kill nematodes. Two reasons prompted this work on nematodes. First, tank work with susceptible crop in infested localities was greatly handicapped or wholly prevented by the presence of nematodes. Second, if it could be proved that flooding would control nematodes, such practice would probably become quite popular, thus influencing materially the use of water in the Delta.

A. L. Fellows left Berkeley the latter part of December for Colorado and Utah. In Colorado he spent some time in consultation regarding his several projects and especially regarding the Cold Springs Dam. Beginning January 1 he will be stationed in Utah temporarily and will assist Mr. Winsor in writing specifications for the construction of the Bear River Bay Bird Refuge.

During the month of December, A. A. Young was transferred to the Southern California Territory with headquarters at Santa Ana. Mr. Young started immediately on the installation of soil tanks on a tract of land five miles out of Santa Ana and will conduct experiments to determine evaporation and transpiration losses from soil on which native vegetation is growing.

The following reports have been received at the Berkeley Office;

"Report on the Agricultural and Economic Phases of the Crook County Improvement District No. 1 (Lone Pine District) to the State Reclamation Commission of Oregon," by W. L. Powers, R. E. Stephenson, W. W. McLaughlin and Paul A. Ewing.

"Drainage by Means of Wells," by M. R. Lewis, (Report presented before Oregon Reclamation Congress, November 14, 1928).

"Cooperative Work Carried on in the State of Texas" by R. G. Hemphill. (Biennial Report)

"Report of Cooperative Irrigation Investigations in California, July 1, 1926 to June 30, 1928", by W. W. McLaughlin. (Biennial Report to the State Engineer of California.)

